

# Air Education and Training Command

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*Sustaining the Combat Capability of America's Air Force*



**U.S. AIR FORCE**

## Occupational Survey Report AFSC 3E5X1 Engineering

Lt Sabrina Ocampo  
May 04

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*Integrity - Service - Excellence*

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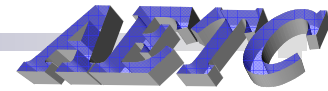
# Overview



- AFOMS Mission
- Survey background
- Survey results



# Mission



**Provide occupational programs to optimize  
United States Air Force  
personnel and training decisions**





# The Team



**AETC**



Air Education and Training Command  
Director of Operations  
**Brigadier General Gilmary M. Hostage III**

First  
Sergeant  
**MSgt Horace Carter**

AFOMS  
Commander  
**Lt Col John Gardner**

Operations  
Officer  
**Capt Dale Myers**

Occupational  
Analysis Flight  
**Mr John Kammrath**

Professional  
Development Flight  
**CMSgt Michael O'Neill**

Test Development  
Flight  
**Mr Dwayne Hafer**

Resources Flight  
**Capt Melissa Ablinger**



# Key Products



**AETC**

## Analysis

- Occupational Surveys—3-year shelf life for enlisted AFSCs
- SKT Extracts/Field Surveys—to support every test development team

## Guides & Handbooks

- 480K Promotion Study Guides distributed
- Airman Handbook



## Promotion Tests

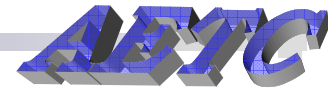
- 320 Promotion Tests
- 600+ SMEs Hosted

## Resources

- Corporate Database
- Software Design



# Applications of Our Data

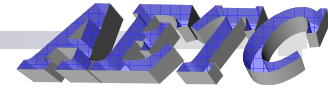


- **Promotion Testing:**
  - Validation of every test question
- **Training:**
  - What...When...Where...To Whom...How??
- **Personnel:**
  - Merge or separate occupations
- **Special Use...Research:**
  - Retention...Force Development....
- **Deployment /Home Station:**
  - Who...What...When...Where??





# Test Development Mission



**Develop, print, ship all enlisted promotion tests and manage worldwide network of test control officers**

**... One-stop shopping for promotion tests**





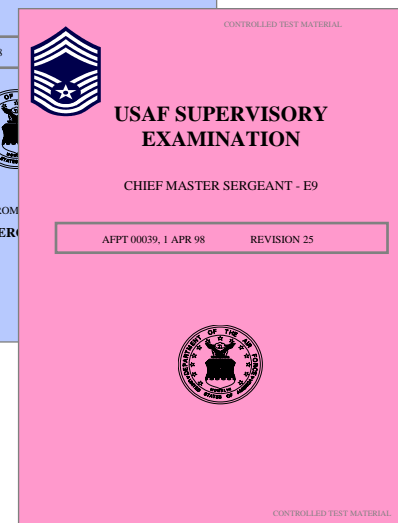
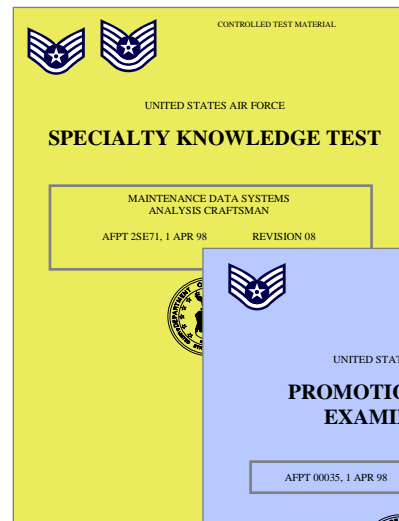


# Promotion Testing: Cornerstone of WAPS

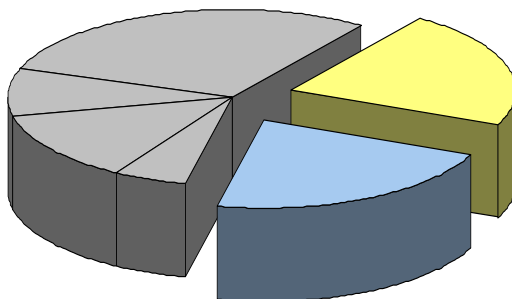


**AETC**

## Valid, Fair, and Credible Tests



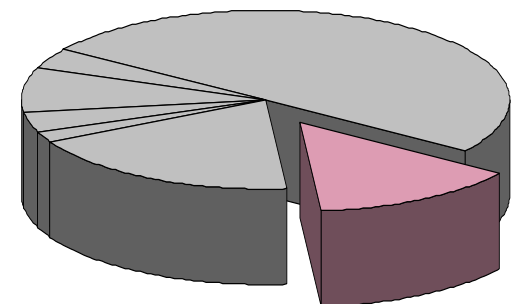
### Weighted Airman Promotion System



**SKT**

**PFE**

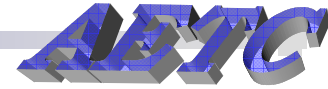
### Senior NCO Promotion Program



**USAFSE**



# Professional Development Mission



**Improve Air Force capabilities by providing high quality reference materials**

**...Produce enlisted promotion study guides and the Airman Handbook**





# Professional Development: Shaping the Enlisted Corps



- **Identify common knowledge for all NCOs**
- **Provide single source reference for promotion testing & professional development**





# Resources Mission



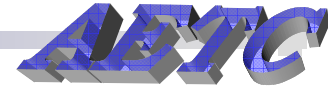
**Provide financial / resource stewardship and automation support for the AFOMS mission**

**...Keep the store open**





# Occupational Analysis Mission



**Facilitate decision-making by providing objective information about Air Force occupations**

**...Find out everything you ever wanted to know about what people do in their Air Force jobs**

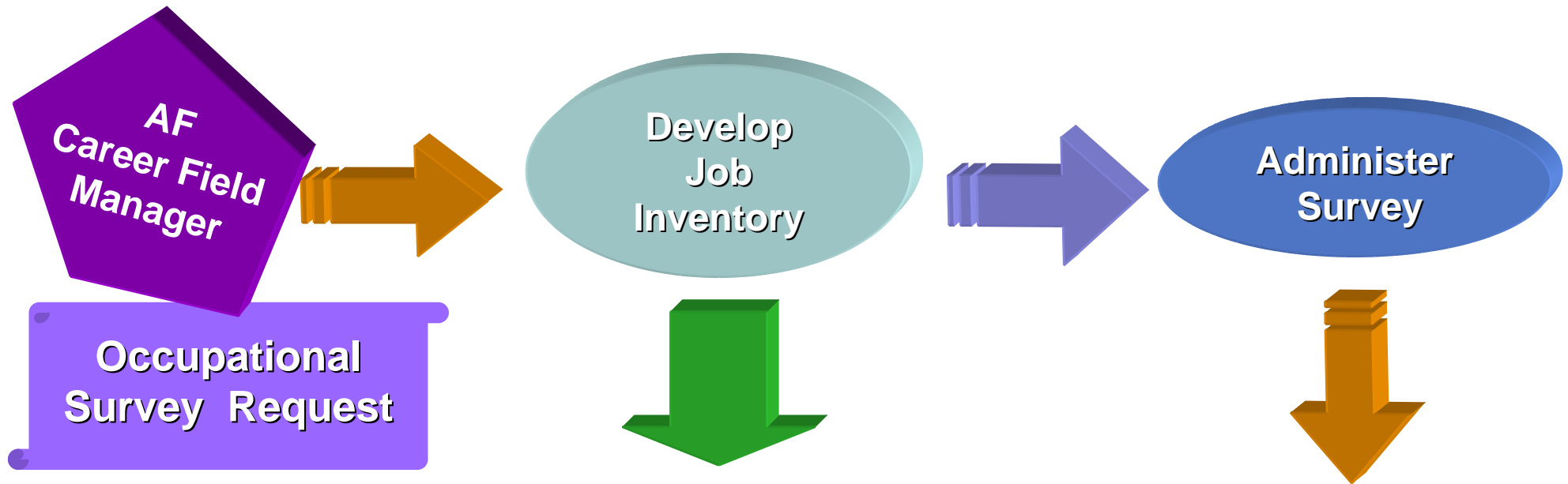




# Occupational Analysis Process (1)



AETC

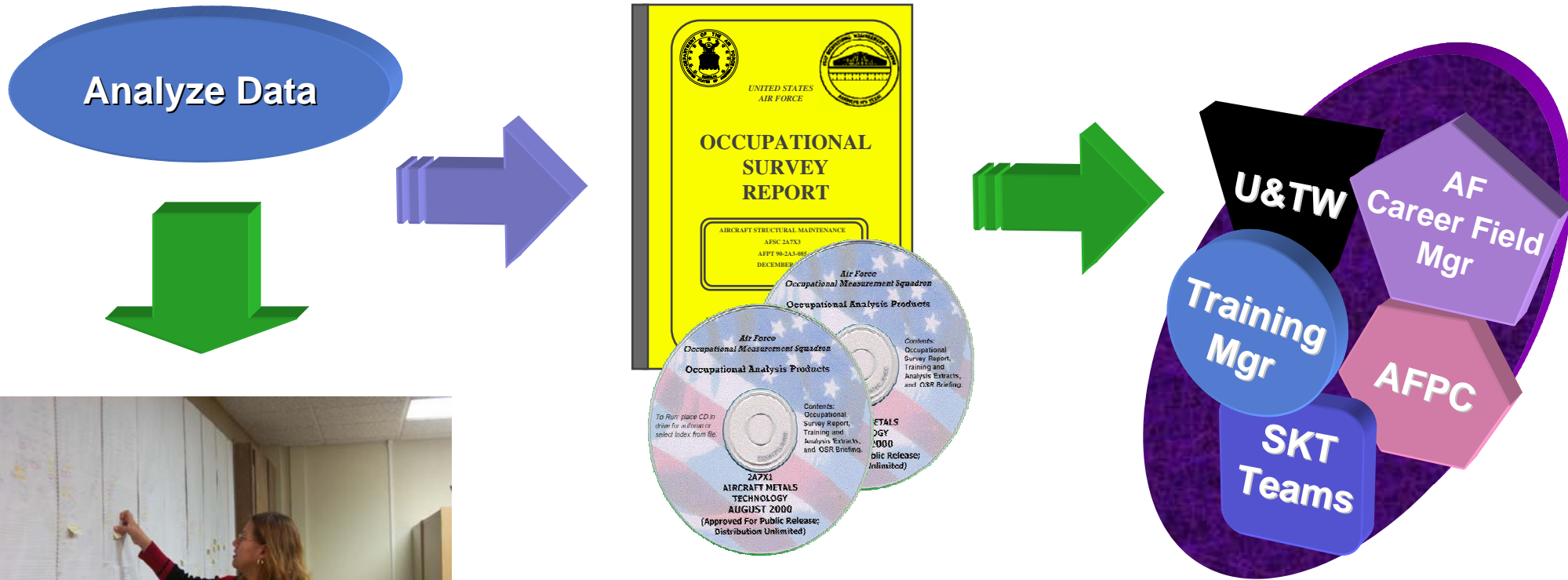




# Occupational Analysis Process (2)



AETC



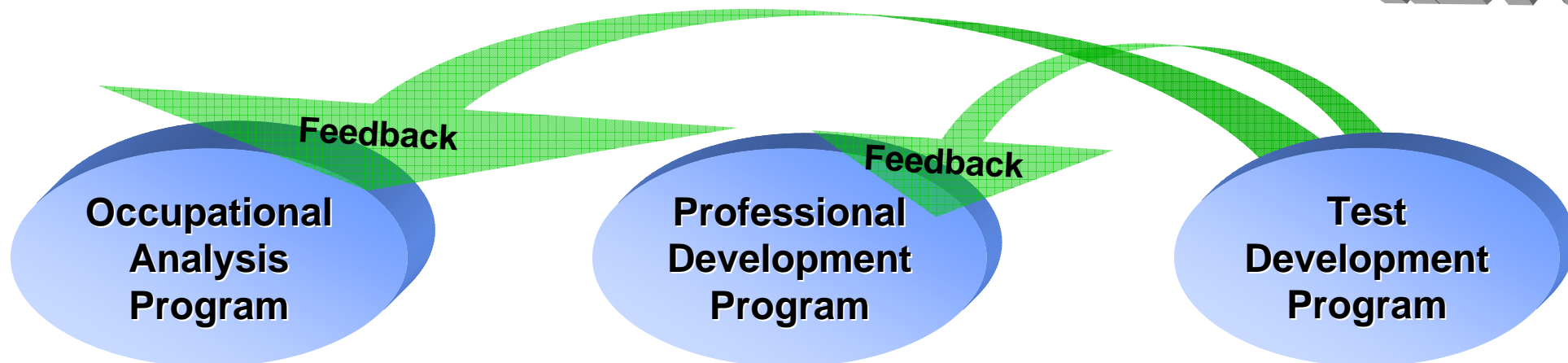




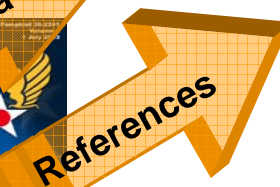
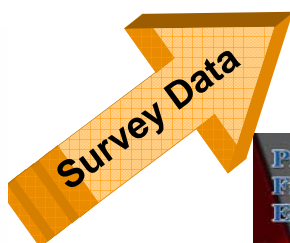
# Program Integration



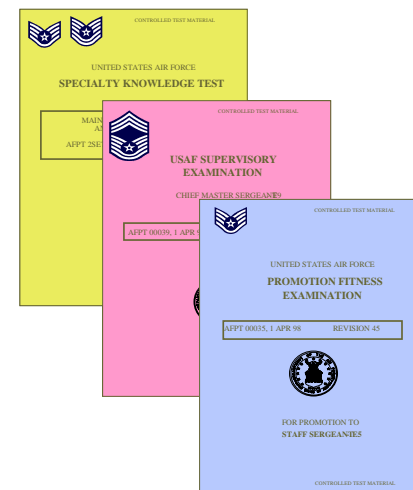
**AETC**



**Occupational Analysis**



**Study Guides**



**Promotion Tests**

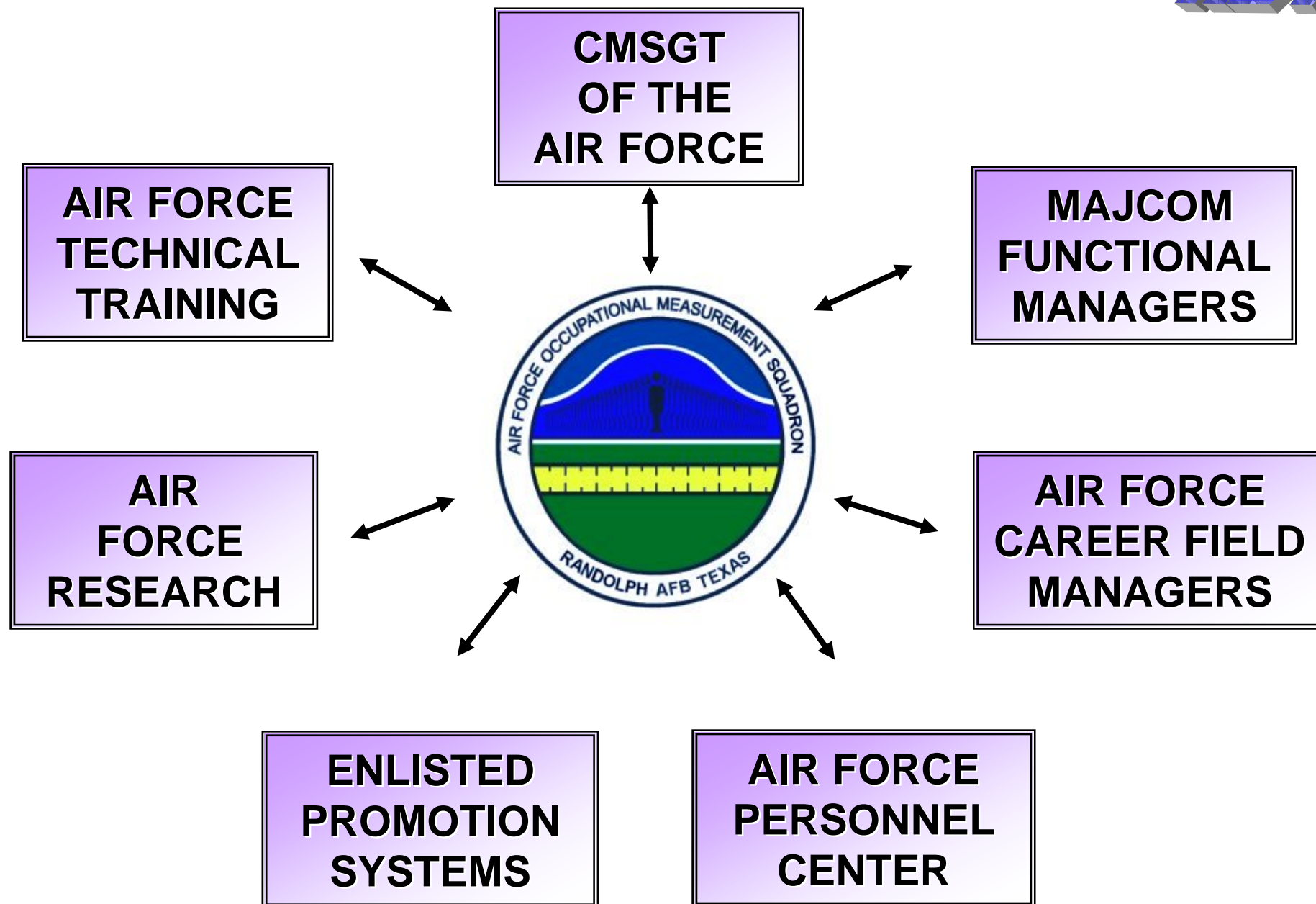




# “Sphere” of Influence



**AETC**





# Occupational Measurement...



**AETC**



## ...Combat-Ready Air Force

**Our success rooted in our objective orientation –  
“No dog in the fight”**



**AETC**



**U.S. AIR FORCE**



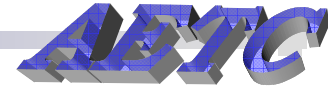
# Executive Summary



- Heterogeneous job structure with four clusters and one independent job (IJ) identified
- Technical tasks are performed at the 3-, 5, and 7-skill levels; however, 7- and 9-skill levels are performing management and supervisory activities
- Career ladder documents are supported by survey data
- Job satisfaction indicators are good



# Work Performed



- Develop engineering designs, use CAD software
- Prepare cost estimates, performance work statements, and specifications for existing and proposed facilities
- Perform drafting duties, Interpret rough engineering sketches to produce working drawings using manual and CAD techniques
- Perform GIS duties, create and populate codes, link graphical data for civil engineering projects, maintain equipment
- Perform surveying and contract management duties
- Perform standardized and expedient test on soils, asphalts, and concrete



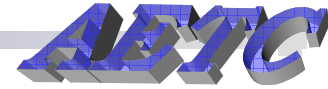
# Current Training Program



- AFSC-awarding course
  - 366 TRS, Fort Leonard Wood MO
  - J3ABP3E531-001, Air Force Unique, AB Course
    - 17 days, 3 CCAF credit hours
  - J5AQA3E531, ITRO, Engineering Apprentice Course
    - 54 days, 15 CCAF credit hours



# Survey Background



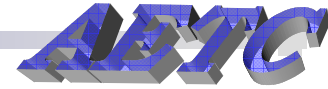
- Last Occupational Survey Report (OSR): November 1999
- Current survey developed: May - July 2003
  - Fort Leonard Wood MO
  - Nellis AFB NV
    - 820<sup>th</sup> RHS/CE
    - 99<sup>TH</sup> CES
  - Hurlburt Field FL
  - Eglin AFB FL







# Survey Background



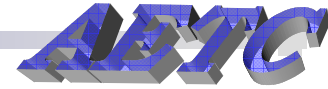
- Survey initiated to obtain data to:
  - Evaluate current classification and training documents
  - Support promotion test development
- Current survey data collected – Nov 03 – Feb 04
- Components surveyed:
  - Active Duty: 3-, 5-, 7- and 9-Skill Levels
  - Guard: 5-, 7- and 9-Skill Levels
  - Reserve: 5-, 7- and 9-Skill Levels







# Survey Sample Characteristics



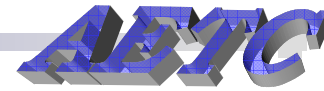
	<u>AD</u>	<u>AFRC</u>	<u>ANG</u>	<u>Total</u>
Assigned*	942	216	426	1,584
Mailed Out	806	168	375	1,349
Sample	497	36	109	642
Usable Returns	61%	22%	29%	48%

- Average time in career field for AD: 7 yrs 5 mos
- Average TAFMS for AD: 9 yrs 3 mos
- Percent of AD in first enlistment: 27%

\* Assigned as of Oct 03



# Command Representation



Command	Assigned %*	Sample %
AETC	7	7
AMC	9	13
ACC	16	19
AFMC	3	3
USAFE	6	8
PACAF	11	15
AFSOC	1	3
AFRC	14	6
ANG	27	17
OTHER	2	1

\* Assigned as of Oct 03

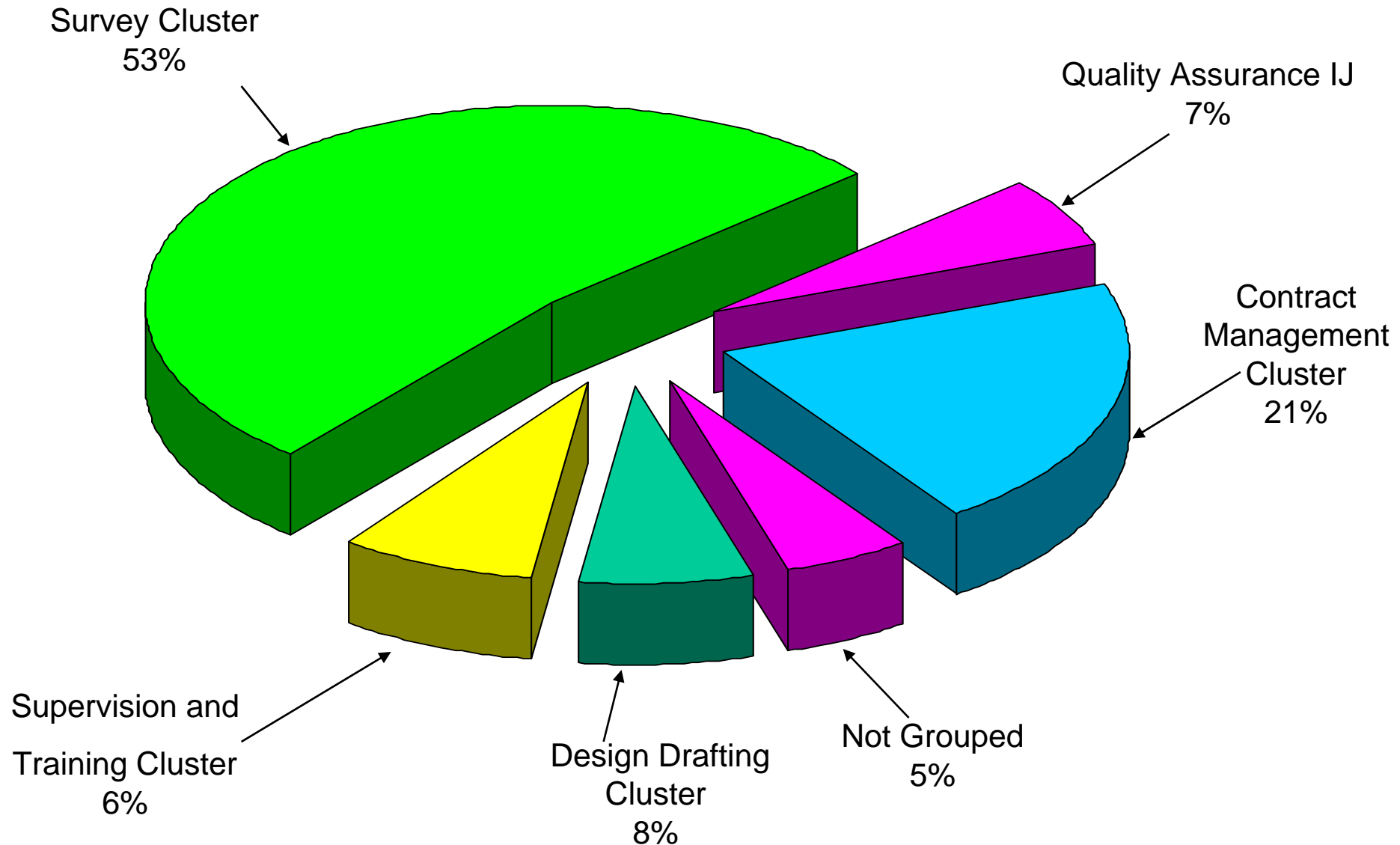


# Job Structure



AETC

Sample size: 642





# Survey Cluster (N=338)

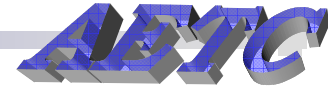


- Plot drawings from CAD systems
- Set up or tear down surveying equipment
- Maintain computer drawing files
- Update as-built drawings in CAD systems
- Communicate using standardized surveying hand signals or radio
- Collect and download electronic data into computer-aided design (CAD)

GIS Job	Mobility and Contingency Job
Survey Job	Mobility Flight Supt Job
NCOIC Job	Force Protection Engineering Job



# Contract Management Cluster (N=137)



- Conduct daily on-site visits
- Conduct contract final acceptance inspections
- Inspect construction projects for compliance with plans and specifications
- Identify contractor performance discrepancies
- Coordinate construction with appropriate agencies
- Inspect construction activities for compliance with safety regulations or procedures
- Document construction activities

Contract Plans Management Job

Contract Management Job

Construction Inspection Job



# Design Drafting Cluster (N=53)



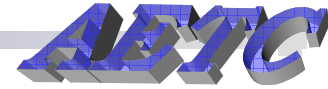
- Plot drawings from CAD systems
- Update as-built drawings in CAD systems
- Maintain computer drawing files
- Reproduce drawings
- Set up or tear down surveying equipment
- Collect and download electronic data into computer-aided design (CAD)
  - systems
- Develop modifications from existing drawings in CAD systems

CADD Systems Job

Manual Drafting Job



# Supervision and Training Cluster (N=37)

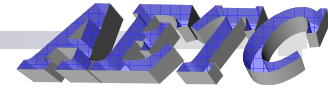


- Counsel subordinates concerning personal matters
- Conduct on-the-job training (OJT)
- Determine or establish work assignments or priorities
- Counsel trainees on training progress
- Evaluate progress of trainees
- Write recommendations for awards or decorations
- Brief personnel concerning training programs or matters
- Write or endorse military performance reports
- Determine training requirements

Supervision Job
Training Job



# Independent Job

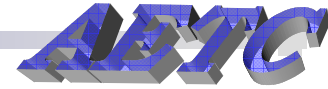


- Quality Assurance IJ (N=48)
  - Conduct service contract inspections
  - Document service contract activities
  - Request contract services
  - Analyze provisions of service contracts
  - Complete surveillance or random sampling documents for service contracts
  - Evaluate quality assurance surveillance plans (QASPs) for service contracts
  - Develop performance work statements (PWSs)
  - Review PWSs
  - Prepare QASPs for service contracts





# Career Ladder Progression

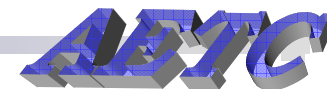


- 3- and 5-skill-level personnel
  - Work in the most technical jobs in the career field
  - Spend most of their time on technical tasks
- 7- and 9-skill-level personnel
  - Continue to perform some technical tasks
  - However, take on supervisory, training, and administrative duties



# Career Ladder Progression

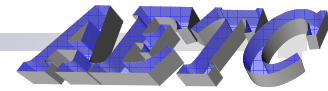
## Percent Time Spent on Duties



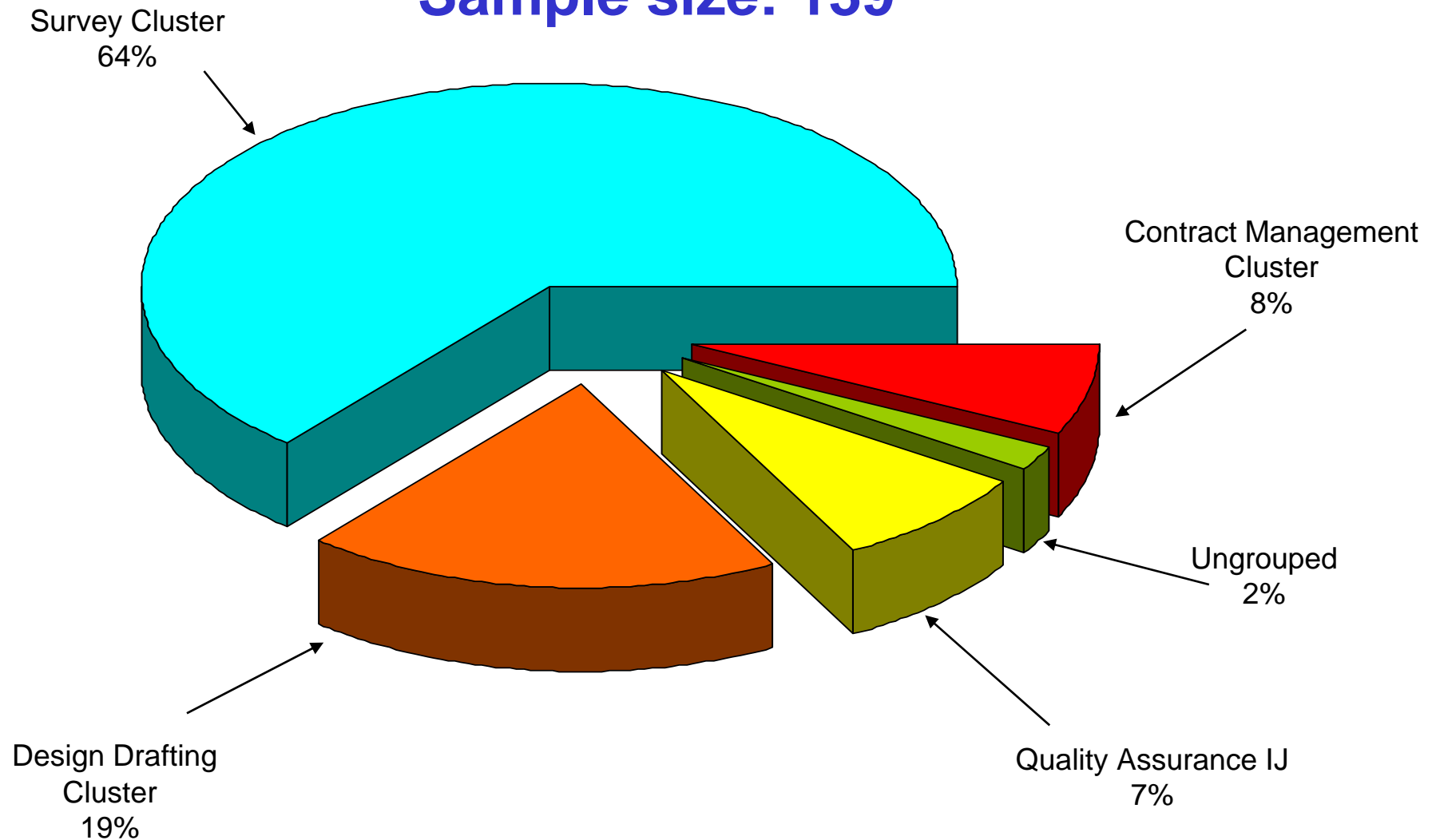
DUTIES	DAFSC	DAFSC	DAFSC	DAFSC
	3E531	3E551	3E571	3E591
	(N=118)	(N=292)	(N=210)	(N=22)
A PERFORMING SURVEYING ACTIVITIES	25	16	11	8
B PERFORMING GEOGRAPHIC INFORMATION SYSTEM (GIS) ACTIVITIES	8	5	2	*
C PERFORMING MANUAL DRAFTING ACTIVITIES	6	5	3	1
D PERFORMING COMPUTER-AIDED DESIGN (CAD) SYSTEM ACTIVITIES	30	17	9	5
E PERFORMING ENGINEERING DESIGN OR PROJECT PLANNING ACTIVITIES	3	6	9	6
F PERFORMING CONTRACT MANAGEMENT OR SIMPLIFIED ACQUISITION OF BASE ENGINEER REQUIREMENTS (SABER) ACTIVITIES	7	16	18	12
G PERFORMING MAINTENANCE ENGINEERING OR SERVICE CONTRACT ACTIVITIES	1	6	2	*
H PERFORMING MATERIAL TESTING	1	1	2	2
I PERFORMING GROUND RADAR EVALUATIONS	*	*	*	*
J PERFORMING ENGINEERING-SPECIFIC MOBILITY AND CONTINGENCY ACTIVITIES	8	7	8	8
K PERFORMING GENERAL MOBILITY AND CONTINGENCY ACTIVITIES	4	5	6	9
L PERFORMING GENERAL ADMINISTRATIVE ACTIVITIES	2	3	3	7
M PERFORMING GENERAL SUPPLY AND EQUIPMENT ACTIVITIES	3	3	3	4
N PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	1	5	8	8
O PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES	1	6	16	30



# First-Enlistment Job Structure

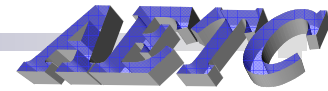


Sample size: 139





# First-Enlistment Personnel Representative Tasks



Percent  
Members  
Performing  
(N=139)

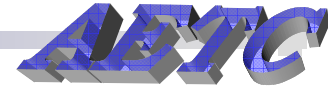
## Tasks

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Plot drawings from CAD systems	81
Update as-built drawings in CAD systems	70
Maintain computer drawing files	69
Set up or tear down surveying equipment	68
Collect and download electronic data into computer-aided design systems	62
Complete architectural plans in CAD systems	58
Create CAD drawing file directories	57
Perform topographic surveys	56
Scan drawings into CAD systems	55



# First-Enlistment Personnel Equipment & Systems



Percent  
Members  
Performing  
(N=139)

## Equipment or Systems

Auto CAD	96
Calculators	82
Scales, Architectural	71
Auto Level	71
GPS Equipment	68
Scales, Engineering	68
Geodimeter	66
Geodimeter Total Station	65
Tape Measures	65
Prisms	60
Total Station with Data Recorder	57
Plotters	57



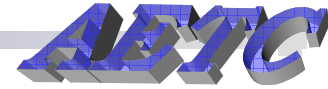
# Specialty Training Standard (STS) Analysis



- **STS matches to AD and Deployed population by TAFMS/DAFSC**
- **STS is generally well supported by survey data**
  - AD: 11 of 93 performance coded STS items were unsupported
  - Deployed: 5 of 93 performance coded STS items were unsupported
  - Unsupported items concentrated in paragraphs 13 and 15
- **Some STS items may need proficiency code review**
  - 11 matched items were uncoded but performed by more than 20% of members in both AD and Deployed population
- **AD: 96 technical tasks performed by 20% or more of members were not referenced to STS**
- **Deployed: 87 tasks performed by 20% or more members but not referenced to STS**
  - These should be reviewed for possible inclusion in STS



# Unsupported STS Elements



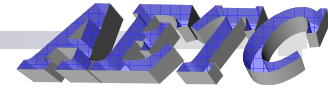
## Examples

UNIT	STS ELEMENT	PROF CODE	PERCENT MEMBERS PERFORMING		TNG EMP*
			1st ENL (N=139)	3- LVL (N=117)	
13.1.10 Task	Compute and layout horizontal curve data A0012. Compute horizontal-curve data	2b	15	18	3.76
13.1.11 Task	Compute and layout vertical curve data A0016. Compute vertical curves	2b	6	7	3.86
13.1.21 Task	Perform field tests on an auto level A0024. Field adjust and test surveying equipment	2b	12	11	4.24
15.1 Task	Perform fundamental drafting practices	2b			
	C0062. Manually develop modifications from existing drawings		3	7	1.97
	C0065. Manually draw charts		3	4	1.45
	C0067. Manually draw electrical plans		3	4	2.55
15.3 Task	Hand letter drawings C0057. Hand letter drawings	2b	3	4	2.00

\*Mean TE Rating is 2.49, Standard Deviation is 1.79 (HIGH TE= 4.28)



# Proficiency Codes Requiring Review



## Examples

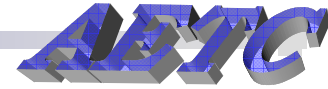
UNIT	STS ELEMENT	PROF CODE	PERCENT MEMBERS PERFORMING		TNG EMP*
			1st ENL (N=139)	3- LVL (N=117)	
16.1. Task	CAD Fundamentals D0089. Develop modifications from existing drawings in CAD systems D0098. Measure irregular lines in CAD systems, such as broken lines or curves D0106. Revise BCPs in CAD systems	--	54 44 24	40 29 22	6.21 5.10 5.62
18.10. Task	Review projects specifications E0142. Review project specifications	--	5	23	1.55
20.11. Task	Mobile Aircraft Arresting Systems (MASS) procedures J0302. Lay out aircraft arresting systems	--	17	23	4.90
21.1.5.4	Mobility Bags K0345. Inspect mobility bags or kits	--	9	23	2.41

\*Mean TE Rating is 2.49, Standard Deviation is 1.79 (HIGH TE= 4.28)





# Tasks not Referenced to STS



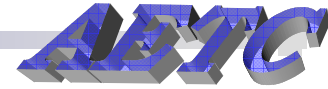
## Examples

		PERCENT MEMBERS PERFORMING		
		1ST ENL (N=139)	3- LVL (N=117)	TNG EMP'
TASK				
A0004	Communicate using standardized surveying hand signals or radio	50	38	4.17
A0002	Collect reconnaissance information on sites to be surveyed	38	34	4.10
A0034	Perform as-built surveys	37	29	5.03
J0295	Develop bare base plans	22	29	6.10
M0406	Inventory equipment, tools, or supplies	26	32	2.62

\*Mean TE Rating is 2.49, Standard Deviation is 1.79 (HIGH TE= 4.28)



# Job Satisfaction Indicators (Across AD, ANG, AFRC)

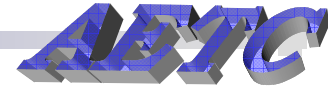


	<u>AD (N=497)</u>	<u>ANG (N=109)</u>	<u>AFRC (N=36)</u>
JOB INTERESTING	75	87	78
TALENTS WELL UTILIZED	83	86	91
TRAINING WELL UTILIZED	78	81	86
SENSE OF ACCOMPLISHMENT	72	73	72
REENLISTMENT INTENTIONS	59	70	67



# Retention Dimensions

## First-Term Airmen (N=136)



PLANNING TO REENLIST (N=61)	PERCENT	AVERAGE
	RESPONDING	
Off-duty edu or training opportunities	77	2.63
Military-related edu & training opportunities	73	2.56
Pay and allowances	63	2.45
Medical or dental care for family members	62	2.53
Job security	59	2.64
PLANNING TO SEPARATE (N=75)		
Military lifestyle	65	2.27
Pay and Allowance	45	2.12
Civilian job opportunities	39	2.40
Number/duration of TDYs or deployments	36	2.41
Location of present assignment	35	2.50

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



# Retention Dimensions

## Second-Term Airmen (N=135)



PLANNING TO REENLIST (N=85)	PERCENT RESPONDING	AVERAGE
Retirement benefits	68	2.58
Pay and allowances	64	2.53
Medical or dental care for family members	60	2.76
Off-duty education and training opportunities	59	2.78
Military lifestyle	57	2.19

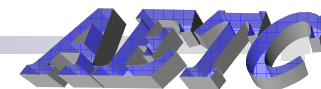
### PLANNING TO SEPARATE (N=50)

Civilian job opportunities	54	2.44
Recognition of efforts	50	2.20
Leadership at unit level	42	2.33
Number/duration of TDYs or deployments	40	2.60
Military lifestyle	40	2.25

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



# Retention Dimensions Career Airmen (N=166)



PLANNING TO REENLIST (N=149)	PERCENT RESPONDING	AVERAGE
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Retirement benefits	72	2.68
Job security	56	2.49
Pay and allowances	54	2.46
Military lifestyle	52	2.37
Off-duty edu or training opportunities	50	2.45

PLANNING TO SEPARATE (N=17)		
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Military lifestyle	58	2.50
Civilian job opportunities	41	2.57
Esprit de corps/morale	41	2.29
Additional duties	36	2.00
Spouse's career	35	2.67

Scale: 1 = slight influence, 2 = moderate influence, 3 = strong influence



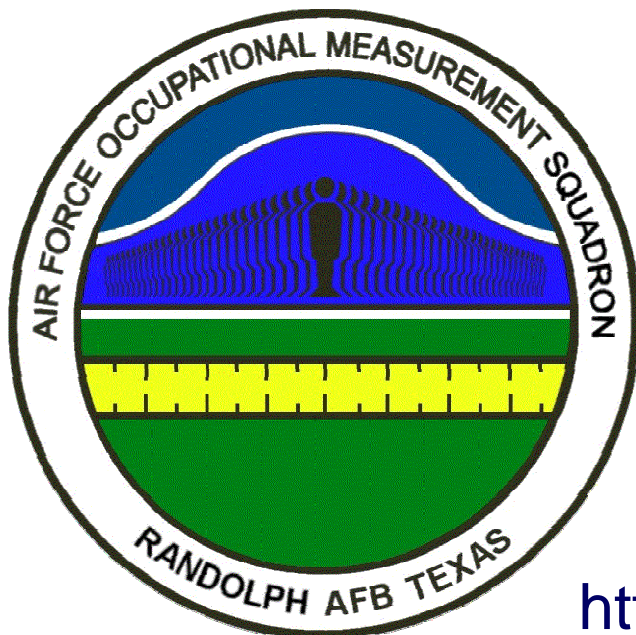
# Summary of Results



- Career ladder progression typical
  - Technical at 3-skill level progressing to more managerial at 9-skill level
- Career ladder documents generally well supported by survey data
- Job satisfaction indicators
  - Higher for ANG and AFRC members than AD
  - AD job satisfaction is great

# Questions?

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## **AFOMS/OA**

1550 Fifth Street East  
Randolph AFB, TX 78150  
DSN 487-6625 Ext 3041

**Visit our web site at:**

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**E-Mail: [sabrina.ocampo@randolph.af.mil](mailto:sabrina.ocampo@randolph.af.mil)**

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